



MAGAZINE



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Contributors

George Farwell was born in Bath, Somerset. Settled in Australia 26 years ago and has written eight books about Australia, based on extensive travels. Is also a playwright, literary critic, short story writer and journalist. Was Public Relations Officer for the Adelaide Festival of Arts in 1960 and 1962 and helped to found this Australian festival that has taken the famous Edinburgh Festival for its model.

James Newman, deputy head of the Entomological Section at Jealott's Hill Research Station, has been with the Company since 1946, when he joined as a technical officer. During the war he served in the army, doing medical entomology in Burma and the Middle East. Takes a busman's holiday when it comes to hobbies: is keenly interested in natural history and is president of the Reading Natural History Society.

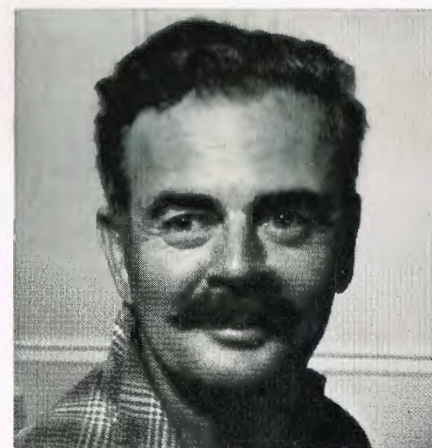
Lawrence Norton is the second member of his family to appear prominently in the *Magazine* in the last few months. His 25-year-old brother George, a labourer at General Chemicals Division's Castner-Kellner Works, was featured in April as the new British 8-stone weight-lifting champion. Lawrence Norton, a mechanical engineering draughtsman at Castner, is a champion in a very different field, that of ballroom dancing. He and his partner are the current United Kingdom amateur old-time dance champions.

Gordon Waldie is a development engineer at Wilton Works. After reading mechanical engineering at Edinburgh University he joined Nobel Division in 1949. Was plant engineer at Hillhouse Works for two years. Has held present job since 1959. A member of the Scottish Mountaineering Club, he also enjoys skiing.

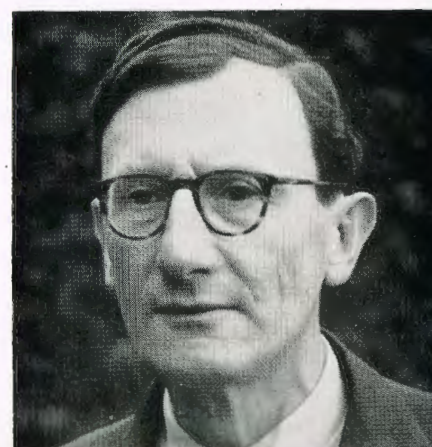
Cover

ICI's solar evaporation saltfields in Southern Australia. A tractor is smoothing the drift salt round the edges of the crystallising ponds

This is the last monthly issue of the ICI Magazine, price twopence. Edited by Sir Richard Keane, Bt., with the assistance of Colin Forbes as art editor and Anne Bilsland as news editor, it is printed at The Kynoch Press, Birmingham, and published by Imperial Chemical Industries Limited, Imperial Chemical House, Millbank, London S.W.1 (phone VICtoria 4444). Henceforth the ICI Magazine will be published every two months and the next issue will be in August, under the editorship of Mr. Henry Maxwell, who will be glad to consider articles and photographs for publication. Payment will be made for those accepted.



George Farwell



James Newman



Gordon Waldie

WHEN the ordinary person talks about economic growth, what he usually has in mind is a state of affairs where the material standard of living of everyone in the country improves dramatically and goes on improving year after year. Apparently everyone is now agreed that such growth is a good thing. There is also general agreement that in recent years we have had less of it than most other industrial countries and less of it than we used to have. However, the National Economic Development Council ("Neddy") has now been set up to change all this. Over the past ten years we have barely maintained a growth rate of 2% in the average year. According to Neddy, we are now to plan for a growth rate of 4% annually over the next five years; if this is achieved we shall double our standard of living within twenty years. Without exception the commentators have welcomed this as an admirable and courageous target. All we lack is a few details about how it is to be reached and what is involved in reaching it.

Dr. Barna's Survey

We may have to wait quite a time for these details, and one reason for the delay is that so far very few experts have undertaken any realistic and systematic research to discover how, in fact, economic growth is achieved in everyday life. One of the exceptions is Dr. Barna, whose survey of two major British industries, electrical engineering and food processing, has just been published by the Cambridge University Press. What he has to say is highly relevant to the work of Neddy. His first major finding is that for each industry as a whole statistics about the *average* rate of growth are pretty meaningless; the growth rate varied greatly between the firms studied. The fastest-growing firms expanded by 15% or more per annum, while the slowest-growing ones managed to do nothing better than 2-3% per

annum. The net profits of some firms were well over 20%, while other firms barely managed to earn 5% on their assets.

Having documented this all-important feature of British industry—the very wide range between the dynamic and the stagnant firms—Dr. Barna then examines various possible reasons for the disparity. He concludes that “the chief reason for poor performance appears to have been a lack of decision (by management) in the light of known facts rather than a lack of forecasting. It is the determination of a



Mark Abrams

firm to make full use of opportunities which is supremely important rather than forecasting a long way ahead. Energetic and able managements were successful whether or not they employed long-term planning techniques.”

His second major finding is that the sort of managerial judgment essential for rapid growth “can be best provided by bringing together persons with different backgrounds. In successful firms there is co-operation between engineers, salesmen and accountants. . . . In unsuccessful

firms mistakes . . . may be attributable to the preponderance of one type of outlook. . . . The successful businessman recognises social wants and he creates new means, or more efficient means, to satisfy them. He is orientated towards his market and not towards his product, techniques of production or organisation.”

If we accept Dr. Barna's analysis (and I do), it looks as if Neddy, despite the wide satisfaction with its 4% target, has some very tough difficulties ahead of it. Planning by itself clearly won't produce economic growth. The real task clearly is to encourage managements who are prepared to make decisions and make full use of the existing opportunities and who approach their problems with an overall concern for what the customer wants.

Three Consequences

Now, carrying out this task has two or three consequences which may make economic growth look less attractive to some people. It means that successful firms should be rewarded and unsuccessful ones penalised (by and large, that is a reversal of our past and present policies). And that may mean, at least for some years, less economic stability and less economic equality. Again, it means that an equal share in managerial responsibility must be given to those concerned with marketing, advertising and consumer research, and such a development may offend the prejudices of those who regard these activities as either wasteful or ungentlemanly.

In short, when we get beyond mere targets and have to face the costs of economic growth some people may well prefer to leave things as they are. Their objections would not be altogether ludicrous, but it would be a pity if they prevailed.

The opinions expressed in this article are not necessarily those of the Company

Harvest from the sea...

Being the story of ICI's huge saltfield in southern Australia, where on an average 100,000 tons of sea water is evaporated by the sun every day to yield 400,000 tons of salt at harvest time in autumn each March and April

by George Farwell

Sun-dried salt in the final crystallizing pond. Harvesting is going on in the middle distance and salt is pouring off a conveyor for stacking alongside the road



If the moon had water, you might imagine these to be lunar plains. A low range of glittering salt peaks flanks a shallow lake. The sun beats down fiercely, and the glare is terrific. On great empty pans of salt weird-looking machines crawl crab-fashion over surfaces as white as pack-ice, like some spaceman's vision of Martian creatures browsing on barren earth. They move as if without human aid, dragging long entrails of power lines behind them.

If this was harvesting, it was like nothing I had seen before.

"I have just been working out the tonnage for the first two weeks of the harvest", said Mr. Warren Bonython, Saltfields Manager for ICI Alkali (Australia). "The present estimate is 110,000 tons of salt. If we can keep that up, we'll reach a record 400,000 tons this year."

Not bad going for a season that lasts only two months! It was a figure they nearly reached in 1961, he told me. After one of the wettest Aprils in recent times, they finished up 500 tons short of their target for the salt that is turned into soda ash and caustic soda at the ICI Alkali works at Osborne, six miles away.

The saltfield in the Dry Creek district—so named after a local watercourse that used to flow only after rain—has been producing steadily since the late 1930s, when ICI first saw its possibilities. Output at first was fairly small, though mechanisation and new techniques have now achieved a high rate of productivity. These days it is hard to realise that so large an enterprise could have started with manual labour alone. The first developmental work was done by men using shovels, wheelbarrows, and planks to prevent them all sinking into the mud.

It was heavy work. Yet there were hundreds who welcomed it at the time. The Great Depression was just starting to recede and men were only too glad of any way to earn money. Many of them are now well-to-do Adelaide citizens who recall those

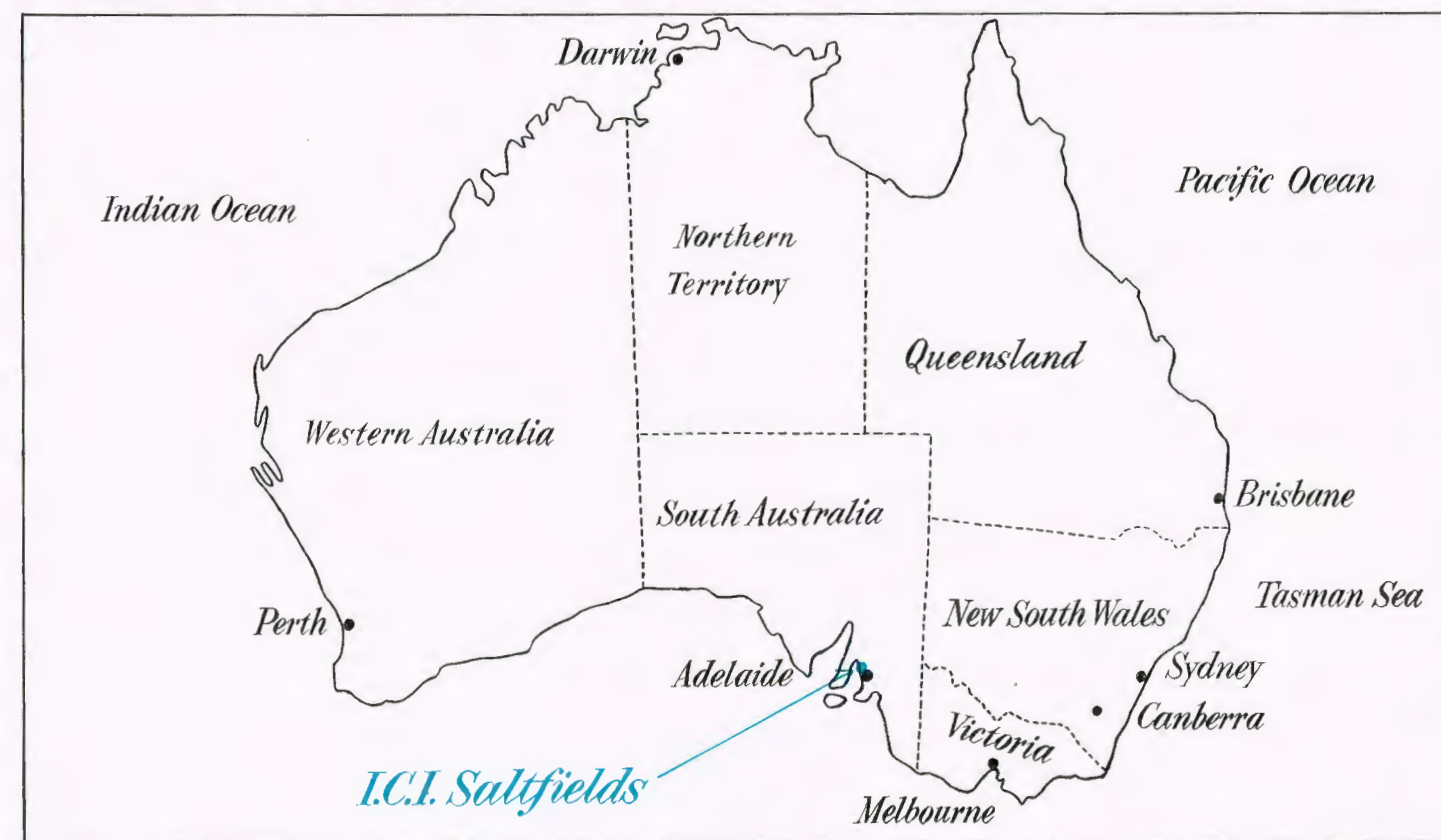
tough days with a kind of wry, nostalgic pride. Between 1935 and 1938 they built many miles of earth embankments to hold back the sea which previously flooded these swamps with every tide.

Actually they were extending and strengthening an earlier levee bank built even more laboriously during another lean time. That was back in 1894. As an unemployment relief measure the State Government of that day decided to reclaim those swamp-lands and open them to grazing. The project never became fully effective, and the salty lands remained idle until ICI came on the scene.

In the beginning the Company developed 2000 acres for salt-making. During the post-war years that area of evaporating ponds has been progressively increased to 5000 acres. Mechanical excavators took the place of toiling men, motor trucks did away with wheelbarrows, while earth-moving machines built solid earth and clay banks. Yet, basically, the method of making salt here is little different from that of the ancient Egyptians or the Persians several thousand years ago. There are still only two ways of recovering it from sea water. In warm countries—India, China, around the Mediterranean and Red Seas, and now in Australia—the age-old practice of using sun and wind to evaporate salt water is still a standard one. Colder countries have to use artificial heat instead—a more costly method.

South Australia has an ideal climate for saltmaking. It has long, hot summers, a high rate of evaporation and little summer rain. At Dry Creek the average rainfall between October and March—the antipodean summer—is only seven inches. The evaporation rate during the same period is 60 inches.

The actual harvest, which begins at the end of summer—usually late in March—is only a small part of the cycle of production, which normally lasts from six to eight months. It needs





a whole chain of artificial lakes that reach, north and south, from one horizon to another. From the Company's offices and workshop to the most northerly pumping station is 12 miles, but to drive round those man-made ponds will take you at least 35 miles.

Scenically, these reclaimed swamps have a strange fascination. At times the wide expanses of shallow water remind you of the Norfolk Broads, though you would be in trouble if you produced a shotgun here. The region has been declared a bird sanctuary. The abundant wild life seems well aware of it, especially when the duck-shooting season opens. Everywhere you see wild duck, ibis, lone pelicans cruising and black swans.

Sometimes the distant Adelaide Hills are reflected in still water; sometimes a sea breeze ruffles the image of innumerable salt stacks that look like a sawtoothed range under heavy snow. There are mangrove swamps, too, still in their virgin state, recalling the lonely crocodile country of tropical Australia. But the dominant impression is always of parched air, the tang of salt and a blinding white glare.

You need some imagination to realise just how much capital and human effort have gone into shaping what, after all, still appears wild scenery. In today's money the equivalent of some £2,000,000 has been spent on development. Chief expense was in building the many miles of embankments. The concentrating ponds—nearly 5000 acres of them—did not involve any appreciable levelling of ground, but in some places large areas of dense mangroves had to be cleared. For instance, in one 500-acre pond a team of axemen spent two months cutting away nearly 200 acres of trees. The smaller area of crystallising ponds, near the southern end, also had to be carefully graded, as well as having strictly rectangular banks. Their clay beds had to be consolidated with shell grit brought from the coast nearby. Finally sluice gates, pumping plants and pipelines had to be installed at various points.

Controlled Pumping

All this has brought about a remarkable control over the elements. Sea water is pumped in from St. Vincent's Gulf at and near the northern end, then moved slowly by gravitation from one pond to another in the initial concentrating area, using sluice gates and stop logs. This movement is controlled from the manager's office, which has a series of detailed charts noting the level and salt concentration in each pond. Evaporation causes the sea water to increase its saltiness as it flows southward. By the time it reaches what are termed the Final Areas, the total salt content rises to some 17%. When it enters the crystallising ponds the figure is nearer 26%.

To emphasise just how effectively the sun's heat has been used, Mr. Bonython told me that some 25,000,000 tons of sea water is pumped in annually from the Gulf. Throughout the saltmaking season an average of 100,000 tons is evaporated every day.

What fascinated me was the fact that the saltmakers of ancient times appear to have known enough about natural science to work in just the same way. I asked him if this was true.

"Apart from certain refinements in the control of brine flow and concentration," he said, "the only new factors modern

Green-dyed crystallizing ponds during the saltmaking season



ABOVE: **Harvesting machine** picking up salt and feeding it on to a conveyor belt

BELOW: **Harvested salt** pouring off a stacker conveyor



saltmakers have introduced are mechanical harvesting and the use of dye."

Such factors, of course, have been all-important. They have certainly increased production. The application of a special dye in the crystallising ponds has made a tremendous difference. This dye, an ICI product, is known as 'Solivap' Green ('Solivap' being an abbreviation for "solar evaporation"). It has the effect of trapping the sun's radiation and increasing the rate of evaporation by 20%.

The final crystallising stage takes place in a comparatively small area of the field; some 430 acres. The concentrated sea water—known at this stage as maxden brine—is pumped into a series of small, rectangular crystallising ponds laid out in rows, each one separated from the next by a low earth bank. By the end of summer the underlying salt crust reaches a thickness of six inches. Before harvesting, the water is run off through sluice gates, and the salt crust is further drained by cutting parallel furrows across it with a tractor-drawn scoop. These furrows are 14 feet apart, the width of the cut to be made by the mechanical harvesters.

45-ton Harvester

These are the Martian monsters that so much impressed me on my first visit to the field. They are immense machines, weighing up to 45 tons. Basically, you can call them tractors. But so much extra machinery has been built on that you would hardly recognise them. Each one has a continuous belt system that lifts the broken-up salt crust to a conveyor system of unique design that stretches away for 800 feet to the shoreline.

The conveyor itself is a remarkable piece of construction. It carries the harvested salt continuously to the shore, where a final belt system lifts it 37 feet into the air to feed the stacking bays. Its designers had to face a difficult problem. Since it takes only about 12 minutes to make a complete cut across the pond, the conveyor has to be shifted sideways for the next operation. To make this easier it has been built in six self-operating sections, each of which moves independently on caterpillar tracks. Hence the long line of electric cables reaching out across the salt.

The harvesting machines also call for highly skilled control. Watching them at work, you wonder how the operator manages to lift the exact depth of salt from the bed without digging into clay or leaving any salt behind.

"Results speak for themselves," Mr. Bonython said. "To put it conservatively, we get less than one-half per cent of insoluble material in the final salt yield. In many cases it goes as low as one-tenth of one per-cent."

It is in these harvesting methods that the field's real achievements have been made.

Back in 1939 the Company employed 125 men to harvest salt. They worked with shovels and loaded the salt into small trucks run out on a portable railway, which had to be continually shifted.

Production was limited to some 800 tons in an eight-hour day. The following year this system of shovelling by hand was abolished, and a bulldozer was used to push the salt into heaps for loading. This, too, was pretty slow. The next stage was to experiment with a built-up tractor, equipped with a conveyor belt which fed the salt into the same set of trucks, which were drawn to the stacking bays by a diesel loco. Then, in 1946-47, the present conveyor system was introduced. It was costly to

build—to replace it at present values would cost at least £150,000—but the results made it worth while. Only twenty men are needed for the entire harvesting operation today, and their daily tally averages 10,000 tons.

No one seems quite able to tell you how the first harvesting machine was designed. It appears to have just grown. Someone added a new device here, made some modification there, until the slow-moving mechanical monster known as a Hodag took final shape. No one can even tell you how it acquired this name. It has no reference to any maker or standard machine. Nor did a visiting American engineer throw much light on the mystery when he remarked that he had once hunted Hodags in the woods of Wisconsin.

Mr. Bonython takes even greater pride in the latest addition to his harvesting stable. A bigger, more powerful machine, also built up from a heavy tractor, it is diesel-electric and has a control panel like the stops on a cathedral organ. Born only five years ago, it goes by the name of Curdimurka. Curdimurka? That is the aboriginal name for a mythical monster alleged to have dwelt on the lake in more fertile, pluvial times.

You might suppose that the long lines of conical salt stacks fringing the concentrating ponds were the final product of this field. Not a bit of it. Having produced dried salt from an ocean of water, the Company proceeds to dissolve it once again. This time the water used is fresh, drawn from bores deep under the salt field. Mechanically operated sprays continually wash at the base of these stacks, dissolving the caked salt throughout the year. The result is a nearly pure and saturated solution of sodium chloride. This reconstituted brine is then pumped to a nearby reservoir and later delivered through a six-mile pipeline, mainly underground, to the alkali works at Osborne on the Port River.

60-hour Harvest Week

That, at least, accounts for 90% of the field's production. In addition, a small proportion of the salt yield is shipped away in solid form to an associate factory in Sydney, New South Wales, where chlorine and caustic soda are made.

One of the most remarkable features of Dry Creek is the way it keeps its men. A number of its 55 employees have been there since harvesting began before the last war. More than a score of them have each seen twenty years of service.

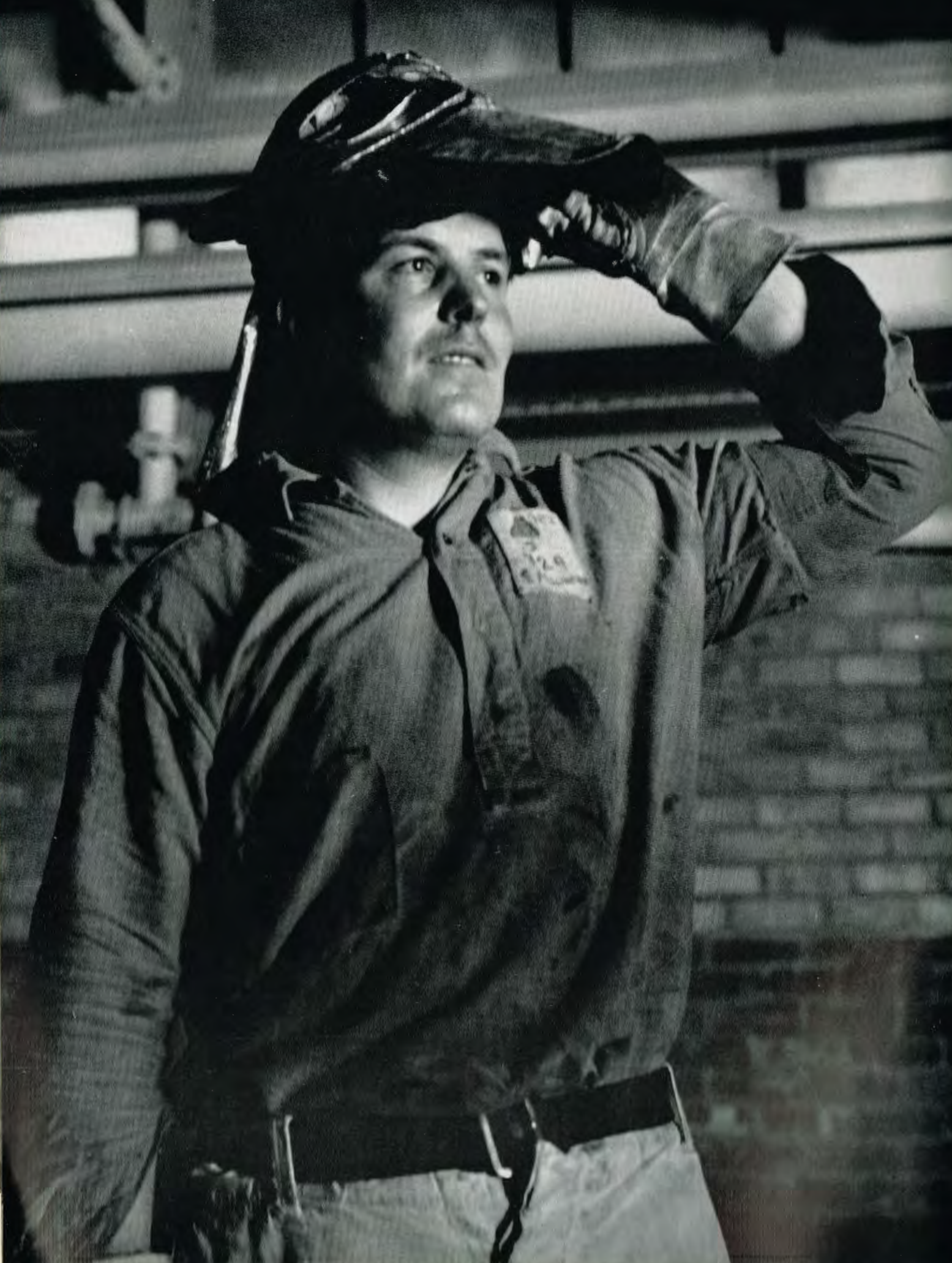
"They're very much part of a hand-picked team going back to the early years," Mr. Bonython said. "There is a team spirit you don't often find these days. During the harvesting season they work long hours—60 hours a week, including overtime. Now that everything has been mechanised there is little heavy work, but it becomes pretty intense while it lasts."

Three years ago, he told me, the ICI work study people looked over the field and suggested a number of improvements. As a result an incentive scheme was introduced, giving a bonus on performance. Men can earn extra money in addition to normal wages and overtime. From time to time they have also suggested new ideas, and take a personal interest in trying to beat their own production records.

"If the need arises," Mr. Bonython told me, "we'll have no difficulty in more than doubling our present output in the foreseeable future."

In the light of Australia's increasing population and industrial growth it seems very likely that this will happen.

One man and his job Carbide Tapper



MORE than average strength and stamina are qualities of which any man has a right to be proud. No doubt it gives twenty-eight-year old George Millington a thrill when he hears himself pointed out to a stranger in Runcorn as a leading carbide tapper at the Castner-Kellner Works in the same awed whisper as would be accorded a heavyweight contender or a shot-putting champion. There is, however, just the chance that the stranger wouldn't understand the workings of the General Chemical Division, and not have the faintest idea what a leading carbide tapper does for a living. In which case it's a pleasure to tell him.

One of the World's Largest

George is a shift worker: you may see him ready for his eight-hour stint wearing protective clothing: blue serge suit, because cotton clothing would catch fire in the intense heat in which he works. Helmeted and with eyes masked, he takes over his squad of six at No. 2 plant, before one of the largest single furnaces in the world.

Here George and his men make carbide out of a fusion which is two-thirds quicklime and one-third coke. The colossal furnace is fired by carbon electrodes of 40 megawatt strength—that is to say, generating heat equivalent to 40,000 one-bar electric fires. Each day over 300 tons of lime and coke are fed into the furnace, to come out as carbide at a temperature of 2000° Centigrade—nearly twice as hot as molten steel. It is the job of George and his team to open up the three tap-holes in the side of furnace No. 2, through which carbide pours into automatically operated trucks called bogeys, moulds holding up to a ton and a half apiece which gradually cool in twenty-four hours.

Handling the tools to tap holes calls for the strength of a superman. First George gets to work with a "pencil"—a huge drilling instrument at the end of a high-slung steel weapon resembling a small field gun. With this in his gauntleted hands George burns a way through the prepared tap-holes in the furnace wall of solidified carbide for the molten mixture to pour through. When the "pencil" doesn't set the stream stirring swiftly enough George has recourse to "rodding," which he finds the hardest part of his job. The rod is a steel lance some 25 feet long with which George prods and scrapes into the heart of the furnace to stimulate the flow. When the mixture refuses to shift, remaining solid at the back of the furnace, George uses a lance-tipped hose attached to an oxygen cylinder to disperse the molten mass.

Ration of Lime Juice

It's thirsty work, for a certainty, and the Company provides the men on the job with copious jugs of lime juice. George drinks heartily as he works and has a superman's appetite when he knocks off. It's also dirty work, and the Company is careful to wash the dust stirred up by a tapping before releasing it to the atmosphere. A tapping may take as little as half an hour if no snags are encountered, but in fact very occasionally things do go wrong. There was the time, for instance, when the automatic controls circulating the bogeys under the furnace holes failed to work—and the 2000° Centigrade molten carbide deposited itself on the floor. That was an occasion when the initiative expected of a leading tapper was called for without loss of a second: and George came triumphantly through the test.

The tappers' job isn't only to make vents in the furnace for the carbide to pour through. At the end of each tap they must plug them again with chips of cold carbide rammed home with a mighty 15 foot steel bar which it would take a weight-lifter in good training to manipulate with confidence.

Where it Goes

What happens to the carbide after it has left the bogeys? It is crushed into nuggets, each less than 2½ inches in diameter, and then fed to generators for the production of acetylene gas—one of the main raw materials in industrial chemistry today. Trichloroethylene, one of its derivatives, is invaluable to the dry-cleaning and degreasing trades; PVC provides such plastics as motor-car seat covers, and acetylene is also the basis for the synthetic fibre 'Acrilan,' used in the manufacture of suits.

The eight-hour shifts George Millington puts in call for great strength and the ability to work in searing heat and under terrific radiation, but at least they provide the satisfaction of seeing end products to which he has contributed. George has been a carbide tapper since April 1960 and reckons that it would take him about a fortnight to teach a newcomer the work, "always providing he had it in him." A married man with two children, he was previously engaged on road-making and digging trenches for sewage pipes.

One curious thing about the job is that George has put on weight since he first began sweating it out at No. 1 Plant where he learned to be a tapper two years ago. Perhaps it's just one more proof that a good workman thrives on work that makes exacting demands on him and of the value of which he can feel justly proud.

People and events . . .

£5½ million Macclesfield Development

PHARMACEUTICALS Division have invited tenders for the civil engineering and building works for the first stage of their project to erect a factory at Macclesfield for the production, packaging and distribution of pharmaceutical products.

This first stage—estimated to cost about £5½ million—will include the transfer to Macclesfield of the Division's pharmaceutical processing and packaging activities and the establishment of the nucleus of a plant for the manufacture of bulk pharmaceuticals. A pilot plant for the development of new discoveries and supporting laboratory and office accommodation are also included.

Construction will start this summer, and it is expected that the first units will be in operation by the autumn of 1964.

These developments will occupy less than a quarter of the total site, leaving scope for the expansion that will be necessary to provide for the manufacture of new discoveries emerging from the Division's laboratories at nearby Alderley Park, where over £1 million a year is spent on research. The Division has a number of promising products at the clinical trial stage for which manufacturing capacity will be needed at Macclesfield, in addition to that now to be provided. Total expenditure on the project is likely ultimately to be in the £15-£20 million region.

It is expected that the factory will at first employ about 800 people, of whom probably some 300 will be transferred from other Division establishments. When further stages of the project are completed it is estimated that at least 2000 will be employed.

New Wilton Plant

A NEW 60,000 tons a year plant for the production of para-xylene is being erected by Heavy Organic Chemicals Division at Wilton and is due for completion by mid-1963. Para-xylene is the main raw material for 'Terylene' manufacture, and the increase is planned to meet continued expansion at home as well as by ICI licensees abroad.

The process used will substantially be an improved version of that discovered

by ICI and incorporated in the original Wilton plants whereby mixed xylenes purchased from the oil industry are isomerised to give a very high yield of para-xylene. The new plant is being designed by ICI and construction is already in progress.

A Present for Alice

AMONG the hundred or so Alkali Division employees who received long service awards from **Mr. G. K. Hampshire**, ICI Group B Director, at Winnington on 4th May was **Mr. Leonard Faulkner**.

Mr. Faulkner started work packing and loading soda crystals at Winnington 30 years ago, but he was blinded and wounded in the legs while serving with the Gordon Highlanders in Italy during the last war.

After some months in hospital he returned to the Alkali Division and worked for a time in the Bag Plant at



Mr. Faulkner

Wallerstone. The Works labour manager, **Mr. W. M. Robinson**, who had himself been blinded during the war, persuaded Leonard to apply for a St. Dunstan's training course at Brighton. This six-month course fitted him for his present job as an instrument attendant at Avenue Works.

"It is a nice job and they are a grand crowd of chaps to work with," says Leonard.

Most of all he appreciates the great help and support his wife Alice has given him since he was blinded. To show his appreciation he chose a lady's gold wristlet watch as his award—a present for Alice.

Cover Cat

THE identity of our cover cat last month has come to light. The photograph was the work of **Mr. John Douglas** (Nobel Division Research and Development Dept.), and the cat, "Fluffy," belonged to **Mr. F. E. Brookfield** (Nobel Division Operating Dept.).

Fluffy, who sad to say is now dead, was no ordinary cat. She had even appeared on television. This was after a marathon journey she made, entirely unaided, from Staffordshire home to Saltcoats in Ayrshire. It happened when the Brookfield family after holidaying in Wales broke their journey in Staffordshire, spending the night with friends at Biddulph. In the morning when they came to set off again, the cat, which always went on holiday with them, was missing. After exhaustive but fruitless searching they set off home later in the day, leaving their friends to continue the search. But there was no trace of Fluffy until seven weeks later, when an emaciated and almost unrecognisable object appeared on the doorstep of the Brookfield home in Saltcoats. She had travelled at least 200 miles.

Bottle on the Beach

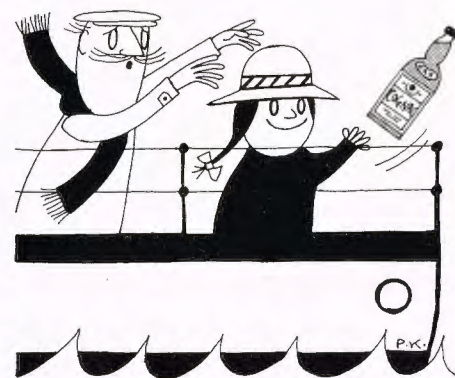
TWO years ago when **Mr. Len Turnbull**, establishment officer at Polyolefines Works, Wilton, was returning from a continental holiday with his

family, his daughter Lynne, then aged 12, picked up a blank landing card and wrote the following message on it: "If anyone finds this message I should be pleased if they would write to me, just to see if it does work." Adding her address, she put the message in a bottle and threw it overboard.

Two years passed. Lynne no longer expected a reply, but one came—from a boy in Holland, who wrote:

"Dear Lynne,

Some days ago I was walking along the beach (at Wassenaar) and I found your bottle with your letter in it. A gale had been blowing and there laid many bottles on the beach.



I looked at each of them, for some years ago I found a bottle with a paper of a Christian organisation in it.

I sent the paper back to Scotland, and after a few days there came a thick envelope from Scotland with psalms and texts of Scripture in it. They also asked me if I would become a member of that Bible society.

So I walked along the beach, and suddenly I saw your bottle with your letter in it. I opened the bottle and read the letter and, you see, it does work.

I wonder who you are, a schoolgirl, or younger, or older. I am a 16 year old schoolboy and I am at a H.B.S.—that is in Holland a kind of High School, specialising on the mathematical side.

With my letter I send you your own letter. It has made a very long trip now.

I hope that I shall hear soon from you, so I shall give you my address.

Kind regards to you,

Daan Woliwenaar"

Middlewich Works to Close

OWING to a change in the pattern of the alkali trade brought about by the increased production of electrolytic caustic soda, Alkali Division has regretfully decided to shut down its Middlewich Works towards the end of 1962 or early in 1963. Middlewich is one of the

IMPERIAL CHEMICAL HOUSE,
MILLBANK,
LONDON, S. W. 1.

15th May, 1962.

TELEPHONE:
VICTORIA 4444.

Dear Reader,

I have been your Editor now for twelve years; and this is the Magazine's last monthly issue and the last one that I shall be responsible for.

It has been a fascinating part-time assignment. Throughout I have had to make one assumption: that most people in ICI, whether payroll or staff, want to know more about their great Company—more about its personalities, its inner workings, its plans, its achievements. Two-thirds of the Magazine has been about this. The challenge has been to sift out those activities that are both suitable for publicity from the Company point of view and also have somewhere within themselves the makings of a fresh readable story. Often it has needed quite a bit of persuasion to make these two requirements meet; and always there has been the problem of extracting from material that is technical and unphotogenic the essential core that makes a compelling industrial story; and to put this across with the minimum of clichés, platitudes or jargon in words and pictures infused with some warmth and vitality.

It has not always been an easy task. But it has always been stimulating. I have had the satisfaction of seeing the circulation grow steadily over the years from a print order of under 50,000 when I first took over to the present print order of 93,000. Thank you all for your support.

Yours sincerely,

Richard Keane

Editor

smallest of ICI's works in mid-Cheshire and accounts for less than 10% of ICI's soda ash capacity in the UK. Supplies of soda ash will not be affected, as production is to be transferred to the much larger works at Lostock and Northwich, which have recently been modernised and extended.

ICI will offer alternative employment to as many as possible of the 250 employees affected and it expects to be able to place most of them.

Future expansion of sales is likely to be met from the large plant at Winnington, where at present all of the sodium carbonate produced is converted to caustic soda and other alkali products. With increasing supplies of caustic soda as a by-product of electrolytic chlorine

production, sodium carbonate capacity is being released at Winnington. It is proposed to install modern plant there to produce soda ash for sale.

Middlewich Works was bought from Murgatroyds in 1895 by Brunner, Mond & Co., who rebuilt the works and re-started it in 1897. The works has produced soda ash continuously since then apart from a period from August 1931 to February the following year, when they were closed owing to the depressed state of trade at that time.

Goodwill Mission

SIX Billingham lads set off last month in pairs to hitch-hike to Cwmbran in South Wales, Corby in Northamptonshire and



Planning routes to Corby, Cwmbran and Cumbernauld (see Goodwill Mission)

Cumbernauld in Dunbartonshire, with which they and some of their friends hope to establish a community link for Billingham. They took with them goodwill messages and cheques for £25, which they handed over to the civic authorities in the three towns. And on their return they handed over a further £25 to the chairman of Billingham UDC at a dinner for old people held in the Billingham Synthonia Junior Club.

Their goodwill mission was part of a project for the Guinness Youth Award scheme. Nine lads and two girls, all but one (who is still at school) employed by the Company, formed themselves into a group early in the year to take part in the scheme. Apart from working for the Guinness Award they have banded together for other activities such as rock climbing, hiking and potholing.

* * *

The idea of trying to forge a link between the town of Billingham and other towns which have grown up in about the same time was one which seemed to fit in well with the object of the scheme of fostering communal activity. The group succeeded in raising £100 by holding dances and decided to allocate it equally between Billingham and three other towns, and their choice fell on the three towns already mentioned.

The couriers to Cumbernauld were **Ian Gill** (apprentice electrician) and **Brian Tatterton** (apprentice fitter); to Cwmbran, **David Reeve** (apprentice fitter) and **Vic Blackburn** (apprentice electrician); to Corby, **Brian McNaughton** and **Tom Lee** (apprentice turners).

Mr. Eddie Wood Retires

A FAREWELL presentation to **Mr. Eddie Wood**, a member of Dyestuffs Division's Publicity Department and for many years a member of this magazine's advisory panel, was held recently at Hexagon House, Manchester. The nature of his work as Division information officer and his very long service—he started his career with Levinstein Ltd., Blackley, in 1915 as a laboratory assistant—have made him widely known not only in his own Division but in ICI generally. Apart from his behind-the-scenes activities as a member of the *Magazine* panel, he also contributed over the years several articles on the history of Dyestuffs Division and on entomological subjects, a special interest of his.

Apart from entomology, Mr. Wood has a mixed bag of interests, including music, botany, bridge, and trying to grow some



Mr. Wood

of the more unusual types of greenhouse plants. He served on the Woodlands Club (a Dyestuffs Division Social Club) Committee for many years, for a time as entertainments secretary, and was recently made a life member.

Publicity Post

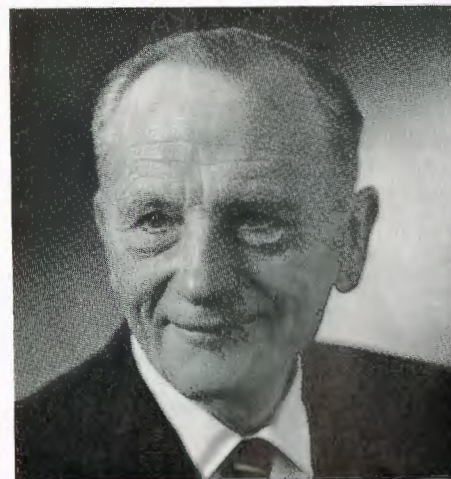
FOR most people retirement means a time to potter and generally to take life at a more leisurely pace. Not so for **Mr. W. O. Cumming**, another ex-member of the *Magazine* Advisory Panel and former works relations officer at Wilton. Within a few weeks of his retirement Mr. Cumming and his wife set off on a round the world trip—a long-held ambition. They were away altogether some six months.

Back home again now, there is still little likelihood that time will hang heavily on Mr. Cumming's hands. He has recently accepted the job of development and publicity officer to the Tees-side Industrial Development Board. In this newly created post Mr. Cumming will carry out the Board's policy of "projecting the image of Tees-side nationally and internationally."

A Cheshire Home in Sussex

THERE are now thirty-four homes for the incurably sick set up in Britain under the guidance and inspiration of Captain Leonard Cheshire, VC. One of the latest of these is Heatherly at Copthorne on the Surrey/Sussex border. The responsibility for running it, one is surprised to learn, lies in the hands of a small voluntary management committee, the majority of them local people, among whom is an ICI man, **Mr. H. M. Molesworth**, who is the treasurer of the home's finances.

The methods of financing the home and its projects can hardly be called



Mr. Cumming

orthodox. "In fact," says Mr. Molesworth, "they make one wince if, as in my case, one has been brought up to respect properly cautious principles of finance." (Mr. Molesworth is a qualified accountant employed in the Treasurer's Department at Millbank.) There is a lot, he says, that would never get past our Capital Programme Committee. But the Cheshire philosophy is that if in faith you try hard enough for a truly worthy goal, you will get it in the end—and this is exactly what seems to happen.

People's generosity has been quite phenomenal. Since the start, just over two years ago, some £40,000 has been contributed to Heatherly either as gifts or in the form of interest-free loans. A recent visitor, for example, wrote a cheque for £1000 on the spot. Besides money, there have also been innumerable gifts in kind. Literally no furniture was bought to get the home started because so much had been given.

Building extensions, which will enable Heatherly to take a further 25 residents and costing some £24,000, have been completed. A colour scheme for the new rooms prepared by Paints Division was the one accepted, and ICI paint is helping to make the new surroundings cheerful.

Photographic Competition

FOR the past eight years the Division Engineering Department of General Chemicals Division has held an art and photographic exhibition. When they moved to their new offices at Runcorn Heath the scale of the exhibition grew and certain open classes—open, that is,



to all employees in the Merseyside area—came into being.

Now they want to make the open classes well and truly "open" and they have decided from 1963—the exhibition is held in early March—to make certain classes of the competition open to any ICI employee, provided, of course, that they are not professional photographers.

There are to be four open classes. These will be for black and white prints,

colour transparencies, colour prints from either the negative or positive processes, and cine films.

For further details please write direct to **Mr. Harry Furber**, Labour Officer, Division Engineering Department, Runcorn Heath.

History in the Basement

TWO employees from Alkali Division's Middlewich Works set out to build their own bungalows last July and in doing so unearthed some of the most important archaeological finds in the town for many years.

Mr. Philip Whittingham, a maintenance services clerk in the General Stores, and **Mr. Harry Done**, a laboratory assistant, kept coming across pieces of pot while they prepared the foundations of their bungalows, but they paid no attention until they reached the drainage stage. As they dug the deep trenches for the drains, they found a number of pieces of a pot vase bearing Roman numerals and clear-cut figures of horses and men with shields as though in battle.

Philip and Harry showed the pieces to an official from the local council surveyor's department, and Mr. F. H. Thompson, Curator of the Grosvenor Museum, Chester, was called in. He identified the pieces as belonging to some of the best tableware of Roman times and said they probably dated from the second century, and had been imported from Gaul (France). Further digging revealed traces of what is thought to have been a street bordered by buildings, belonging to a Roman settlement.

Meanwhile the bungalows have reached the plastering stage and Philip and Harry hope to complete them by the early summer. The buildings, which are situated side by side on King Street, Middlewich, are proof of what can be done by determination and teamwork. Neither Mr. Whittingham nor Mr. Done had had any previous experience of building, but they have called upon casual trade labour only occasionally in a programme that has taken less than a year to complete.

Coal, Fish and Quarries

IN the early 1870s the railway came to Ribblesdale in North Yorkshire. A young Irishman, John Delaney, overseer at a local cotton mill, started up a profitable sideline selling the coal, tea, and fish the railway brought to the dale. The owner of the mill, however, objected to his overseer engaging in private business, so Delaney left the mill and turned his attention to the natural resources of the

dales, acquiring limestone quarrying rights on land at Horton-in-Ribblesdale. Here he erected two kilns for lime production and recruited men from Derbyshire to work the quarries.

Today the quarry that Delaney started has expanded far beyond his original conception and is now the showpiece of Settles Limes Ltd.—the Delaney interests went in with the Ribblesdale Lime Co. and the Craven Lime Co. to form Settles Limes Ltd. in 1939. And last year Settles Limes Ltd. became a wholly owned subsidiary of ICI.



A lion's share of Settles' lime products goes to Scottish and north-east coast steelworks. As sidelines they also offer a lime-spreading service for the dales farmers and—a novel diversification for ICI—they still operate Delaney's wholesale and retail coal business.

Developments Down Under

OUR lead story on ICIANZ's Dry Creek Salt Field serves to pinpoint how ICI's Australian subsidiary has expanded in recent years. As recently as 1950 the value of sales by ICIANZ was only £A19.5 million. By 1960 it had risen to £A62 million. And the number of people employed by ICIANZ and its subsidiaries rose over the same period from 5700 to 9500. One of the things that contributed to this large increase in sales value was the considerable expansion in the field of plastics manufacture.

Recently ICIANZ entered the fertilizer field with their acquisition of Commonwealth Fertilisers and Chemicals Ltd. A subsequent bonus issue of shares to bring the Company's issued capital more into line with the value of assets employed in the business raised ICIANZ capital to £A25,500,000, and capitalwise ICIANZ is now second in the rank of Australian companies, exceeded only by Broken Hill Proprietary, the famous iron and steel organisation.

ICIANZ is spending more than £A13 million on new developments—the highest

In Brief

"Puffin," the "flying bike." The day after the successful half-mile flight of "Puffin," the first man-powered aircraft, the *Daily Herald* interviewed various members of the Hatfield Man-powered Aircraft Club, who built the plane. The secretary was quoted as saying, "Our motto is 'when in doubt call the experts.' ICI advised us on the plastic wing covering, Dunlop on the cycle mechanism."

National youth contest. Miss Rita Lewis, honorary treasurer of the Alexander Fleck Youth Centre at Wilton, was one of some fifty young people from all parts of the country who competed in the final of the competition for the Remington Rand National Junior Leadership Award for 1962. She was one of two youth club members representing the North Riding Association in the final.

Gold stars. Four members of Dyestuffs Division's Derby Works Civil Defence team, Messrs. Brentnall, Garratt, Gregson and Treacy, recently sat for and successfully passed the Gold Star examination for rescue work. This is the highest award in Civil Defence rescue work and was the first occasion it had been obtained in the Borough of Derby by industrial personnel.

Heat exchanger agreement. Marston Excelsior Ltd. of Wolverhampton, an ICI subsidiary, and United Aircraft Products Inc. of Dayton, Ohio, who both make heat transfer equipment for aircraft, have signed a reciprocal licensing agreement. Marstons are providing UAP with their design and know-how for stainless steel and titanium secondary surface heat exchangers, which UAP will make and market in the USA. In return Marstons will be able to make and sell in this country tubular heat exchangers of UAP's design.

Civil Defence Medal. Mr. Fred Jones (General Chemicals Division) has been awarded the Civil Defence Medal for continuous service. He joined the Wardens in 1937 and during the last war was in charge of three first aid posts and a mobile unit.

Dry-smooth cottons. Several papers, including the *Financial Times* and the *Guardian*, described a new smooth-drying finish which has recently been invented by Tootal Broadhurst Lee and Co. which uses a new reagent developed by ICI Dyestuffs Division. Using the new reagent, cottons can be produced which even under the most exacting conditions of laundering—using mechanical washers, power wringers, spin dryers and so on—dry ready for wear without any need for ironing.

First million. Dumfries Factory (Nobel Division) has achieved one million man-hours without lost time accidents for the first time in its history.

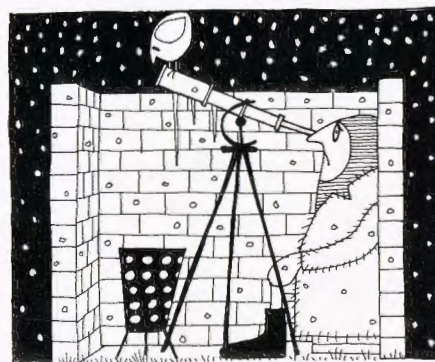
level in the company's history. Production at the Laverton (Victoria) pigments plant—the first step by ICIANZ in the establishment of a comprehensive dyestuffs manufacturing industry—began in April. Extensions to Osborne Works in South Australia which have increased

capacity for alkali production have just come into operation. A plant to manufacture ammonia, methanol, nitric acid, ammonium nitrate and urea for both industrial and agricultural purposes and a plant to manufacture carbon tetrachloride, primarily for the making of fluorocarbons for refrigerants and aerosol propellants, are under way at Botany, New South Wales.

Back-yard Astronomy

Mr. John Macvey, an experimental officer in Nobel Division's Silicones Department, is a man with an unusual hobby—he is an amateur astronomer. Operating with a telescope he assembled himself, he is now studying variable stars (i.e. stars which over periods of time show marked variations in brightness). The work is part of the programme of the variable star section of the British Astronomical Association, of which he is a member.

He thinks the amateur has an important part to play in astronomical research. The large observatories with their colossal instruments are mostly preoccupied with



researches into the farthest depths of space, and present knowledge of our nearest neighbours in space owes much to the industry of serious amateurs. And there is even the chance, admittedly a slim one, of an amateur astronomer making an important discovery. For instance, the late Will Hay, the comedian, achieved fame in astronomical circles as the first man to observe a great white spot which appeared on Saturn in 1933.

What about cost? A good telescope of adequate power, Mr. Macvey tells us, can be built for as little as £10 or a more impressive one bought secondhand within the £15-£30 price bracket. As for a suitable site, the only real essentials are a fairly solid and rigid stand such as a small brick plinth, an unobstructed view of the sky and, so far as is possible, an absence of bright artificial lights. And some degree of shelter for the observer—a small wooden fence or brick wall surrounding the telescope on three sides—is

obviously a good idea, especially on a winter night.

A New Fire-fighting Aid

BCF (bromochlorodifluoromethane) is a new product, recently introduced by General Chemicals Division as a fire-fighting agent. Its main advantages are that it is very effective and is virtually non-toxic. It is especially useful for putting out fires of inflammable liquids, such as petrol or oil, and electrical fires.

Fire-fighting equipment using BCF is already being developed by some of the leading British manufacturers, including the Graviner Manufacturing Co., the Pyrene Co., and the National Fire Protection Co.

So far the principal use for BCF has been in aircraft, where its outstanding properties are especially valuable.

Binding of Magazines

THE Kynoch Press has again agreed to bind *Magazines* and inserts for those who would like this done.

The cost will be 13s. 3d. for a volume of *Magazines* or of inserts, and anyone who wants to take advantage of this offer should hand in his 1961 set to his *Magazine* Correspondent now.

Appointments

Some recent appointments in ICI are: **Billingham Division:** Mr. B. J. Murdoch, Assistant Accountant (in addition to Mr. R. D. Johnson and Mr. R. J. Raeside). **Nobel Division:** Mr. J. R. Burston, Assistant Accountant (in addition to Mr. H. Fitzpatrick and Mr. A. G. Mitchell). **Pharmaceuticals Division:** Dr. H. C. Carrington, Division Development Director; Mr. G. H. Clark, Manager of the Penicillin Plant; Mr. J. A. Geddes, Works Manager, Regent Works; Mr. H. Fine, member of Division Production Department with special duties in connection with the Macclesfield project; Dr. A. S. Haigh, Works Manager Designate of Macclesfield Works. **Plastics Division:** Mr. N. D. Macleod, Manager of new Development Department. **The Regions:** Mr. A. C. D. Rankin, Regional Sales Manager (Chemicals), Midland Region. **Wilton Works:** Dr. R. J. Hawkins, Assistant Works Medical Officer. **ICI (India):** Mr. A. Keown, Commercial Director (formerly Personnel Director).

Retirements

Some recent announcements of senior staff retirements are: **Billingham Division:** Mr. K. C. A. FitzGerald, Head of Fertilizer Publicity Department (retiring 31st August). **Head Office:** Mr. R. Harman, Chief Civil Defence Training Officer. **The Regions:** Mr. H. R. J. Feeny, Regional Sales Manager (Chemicals), Midland Region (retiring 30th June). **ICI (India):** Mr. R. Coleman, Commercial Director (retiring 5th August).

50 Years' Service

The following employees have completed 50 years' service with the Company: **Alkali Division:** Mr. P. Mansell, Stoke Salt Works (30th April); Mr. T. Mills, Winnington Works (8th May); Mr. J. Owen, Buxton Lime Works (1st May); Mr. J. Yarwood, Winnington Works (5th May). **General Chemicals Division:** Mr. J. Windmill, Oldbury Works (5th May).

IN THE
GARDEN
JUNE

ARE strawberries worth growing in pots? I would say yes most definitely if you have a greenhouse, heated or not. It is nice to have those few early strawberries when they are as much as five or even seven shillings a pound. They are by no means difficult to grow, and now is the time to begin, as the earliest runners are the best to grow in pots. If you have strawberry plants in your own garden or allotment you can layer your own young plants, but they must be from healthy disease-free plants, otherwise you will be wasting your time.

Very soon the strawberry plants will be producing their runners. Select the five or six best from each healthy plant, those with clean healthy green foliage which have produced good fruit. Eighteen or twenty would no doubt be as many as you would want to grow in a small greenhouse, but you can layer more than these so that you will have some for planting out to form a new bed as well.

The best young plants will be those layered into pots. Flower pots 3-3½ in. in diameter are quite large enough. Fill the pots with soil—I find a good potting soil such as the John Innes potting compost is the best—and press the soil in so that it is really firm.

Deep Potting

Plunge the pots up to their rims into the soil between the plants from which you are to layer the runners. By doing this you will save yourself a lot of time in watering because they will not dry as quickly as those stood on the surface, and if you place them in groups of ten or twelve, watering is simplified.

Pieces of wire bent to the shape of a hairpin—and no larger—are ideal for fastening the runners to the pots. Place the wire over the runner, immediately at the back of the young plant, and press the

Strawberries in Pots, by Percy Thrower

pin firmly into the soil in the pot so that the plant will root into the soil in the centre of the pot. Layer one runner to each pot and give it a thorough watering. An extension runner will in most cases grow on from the layered plant, but this must be pinched off because the plant must be encouraged to conserve all its energy into building up a fruiting crown for next year. The unwanted runners must also be cut off from the parent.

Disease-free Stock

If you have no plants of your own in the garden or if you have the slightest doubt about the cleanliness of your own plants, order new ones now from a reliable nursery and stipulate that they must be from stock certified by the Ministry of Agriculture as being free from virus disease. When these arrive, if they have not been pot-grown, they can be potted separately into pots the same size as I have recommended for layering.

At no time must the soil in the pots be allowed to get very dry. Those plunged into the soil will, to begin with need watering every other day if the weather is warm and dry, or every four or five days in dull weather. By early August the young plants will be well rooted in the pots and the runner from the parent plant can be cut off near to the pot. After about a week they can be potted on into larger pots—I prefer these to be 6 in. in diameter and in these they will produce their fruit. For this potting use the John Innes potting compost No. 2 and use a pot rammer (a piece of wood about the thickness of a broom handle) to ram the soil into the pot round the plants really firm and hard. When potting is finished there should be an inch between the surface of the soil and the top of the pot, and this will hold enough water to soak the soil in the pot right through.

From then until about the middle of January the pots can be left outside: frost and snow will not harm them. They can then be brought into the greenhouse to begin the new growth. Each plant should produce eight to ten good-size strawberries. It is not wise to allow them to carry more, otherwise they will be small and of poor quality.

From mid-February until the first fruits begin to colour they will need feeding weekly with a good soluble plant food such as 'Solufeed.'

The Annuals

It is time now to sow wallflowers, forget-me-nots, sweet Williams, Canterbury bells, and digitalis or foxgloves. The average garden does not need very many of each of these kinds, a small packet of each one is enough to give colour in the garden from April to August next year. There are of course separate varieties and colours of each, but for general purposes the mixed kinds make a very nice show. Buy seed of a good strain, as nothing will be gained and, in fact, more can be lost through buying cheap seeds. It always pays to get them from a reliable source.

All these can be sown out in the open garden, but the question of where to sow at this time of year often creates a problem in the smaller garden. The actual area of ground for sowing need not be very big, but much more room will be needed when the seedlings are large enough for pricking out. So often they are left in the seed rows until planting-out time in the autumn; this is definitely not the way to grow good plants which will flower freely next year.

The secret is to encourage them to grow into sturdy bushy plants before the winter sets in, and they are unable to do this if they are kept clustered together.

Death-knell for the Aphid

One way of asking the impossible of the research chemist has been to say: produce a chemical that will kill the bad insects and leave the good ones unharmed. Now, at ICI's Jealott's Hill Research Station, the seemingly impossible has been achieved. ICI's new insecticide 'Menazon' is lethal to the aphid (carrier of virus diseases and destroyer of shoot growth) but does not seriously affect other insects.

by James Newman

WHEN visitors are shown round Jealott's Hill, a question which is often put at the end of a visit to the laboratories is "When are you going to produce an insecticide which kills all the bad insects and is harmless to the good ones?" This question is no doubt intended to give a sense of humility to the guide; but the way of such questioners, like that of science fiction writers, becomes increasingly difficult as the results of applied research continue to provide the apparently impossible. ICI's latest insecticide, menazon, does in fact go a long way to meet the difficult specification put by our visitors.

Compounds of the menazon type were first made in the synthetic chemistry section at Jealott's Hill towards the end of 1956, and were soon found to be highly effective against aphids (greenfly) and yet to have little action on anything else. Since that time many related compounds have been made and tested, and the one now known as menazon has emerged as the most useful.

Easy to Handle

Although menazon is an organic phosphorus insecticide, its properties are very different from the general run of such compounds. While highly effective against aphids, it has a low toxicity to warm-blooded animals. This means that products based on menazon can be handled and applied without excessive precaution in the way of protective clothing. Furthermore, the dilutions used in field applications are free from objectionable smell.

Menazon is systemic and persistent in

its insecticidal action—that is, it is able to enter the sap and render the whole plant poisonous to aphids, and to maintain this protection for a long time after one application. Continued research on the way in which menazon works has shown that the action is even more favourable than this brief statement implies. Menazon is fairly stable in the soil and on the surface of the leaves, but once it enters the sap it is broken down, with a half-life of about a week. In practice, a single application provides a reservoir on and around the plant, from which the internal concentration is maintained by slow penetration. This instability in the plant means that it can be protected for the greater part of its growing period, yet no significant residues persist in the harvested crop. Finally, menazon is remarkably free from risk of damaging plants, and can be applied to seeds, or as a dip to the roots of young plants, or to potato tubers, in quantities sufficient to protect them for the greater part of their growth period. This type of application is attractive in that one simple treatment may replace several relatively difficult foliage sprays to the growing crop.

Development Difficulties

As with most new products, the development of menazon has had its difficulties. It is rather poorly soluble in water and organic solvents. This property no doubt helps it to persist for a long time on and around the plant, but it does not make it an easy substance to formulate in a high-concentration product for sale. After much work, the

physical chemists at Jealott's Hill have produced very satisfactory dispersible powder and liquid formulations, which are now beginning to be sold as 'Saphizon' and 'Saphicol.' The other problem has been a biological one—to guide the use of menazon to make the best of its ability to protect plants for a long time. This may involve doing sprays or soil treatments some time before the aphid pests appear, so that the plants never become infested at all.

Virus Diseases Controlled

Properly used, menazon's greatest impact is likely to be in the control of those plant virus diseases which are carried by aphids, and it is on this that the greatest amount of work has been done. Plants are most susceptible to virus infection when young, and the damage done is greatest after early infection, since a greater part of the growth period of the plant is affected by the disease. The early seedling stages, however, are the most difficult to protect with normal insecticide spray applications, as seedlings emerge irregularly and cannot all be protected right from the beginning by a spray applied at one time.

Sugar beet is affected by virus yellows disease, the infection being carried from plant to plant by the green peach aphid in the early summer. This disease seriously reduces the sugar yield of infected plants. Jealott's Hill biologists have done extensive trials with menazon on sugar beet, involving the counting of many thousands of aphids on crops in the field. Results have been very promising, one of the most interesting being that a menazon seed



Aphids on a rosebud

dressing, using only a few ounces of menazon per acre, can give a worth-while effect on sugar yield by delaying the onset of virus yellows.

Potatoes are affected by several aphid-borne virus diseases, and this necessitates the frequent renewal of potato stocks by importing seed from upland areas in Scotland and elsewhere where aphids are fewer. Experiments have shown that menazon can be applied to potato tubers before planting, at the rate of 1 lb. of menazon per ton of seed, and will render the resulting plants toxic to aphids for about two months from the time of sprout emergence. The protection can be extended by a foliage spray if necessary. It is known that this sort of protection can limit the spread of virus disease. Menazon is being sold for this purpose for the first time this year, and is likely to help the production of good potato seed in many places both here and overseas.

Further Trials

Much work remains to be done to explore all the possible uses of menazon in controlling the varied aphid and virus problems in different parts of the world. Very useful results have been obtained on beans and Brussels sprouts in England, and on tobacco and groundnuts in Africa. Current research aims to study in detail methods of protecting various plants for long periods by the use of menazon soil treatments. Menazon will also be a useful material in the garden, and is already an ingredient of 'Abol-X,' ICI's latest retail gardening product.

Wild Life Balance

In the last twenty years great developments have taken place in chemical insecticides, but progress in knowledge of how best to use powerful materials has necessarily been somewhat slower. Sometimes the use of relatively indiscriminate insecticides has resulted in the replacement of one pest by another more difficult to control, due to interference with natural biological control by insect parasites and predators. Today we are rightly concerned about the possible effects of agricultural chemicals on wild-life in general. From such considerations the search for more selective and refined chemical weapons is likely to continue, and in developing menazon we have perhaps made a move towards the insecticide type of the future.

ICI in the USA

Dr. T. Richardson, President of Arnold, Hoffman & Co. Inc., was recently in London for discussions at Head Office. The Editor took the opportunity to obtain this progress report on ICI's subsidiary in the United States.



Thomas Richardson, president of Arnold, Hoffman & Co. Inc., Rhode Island, U.S.A. Trained as a chemist at Durham and Oxford Universities, joining Dyestuffs Division in 1937. Became a sales director of the Division in 1959 and was appointed president of Arnold, Hoffman & Co. in March last year.

EDITOR: *It is a long time since Arnold, Hoffman & Co. has been in the news. I remember the ripple of excitement when ICI bought the company in 1950. The press acclaimed the move as an enterprising effort. Would you say, in general terms, that the purchase has proved a successful one?*

RICHARDSON: A few years ago I would have undoubtedly given a rather reserved answer to that question. I think today I can be much more positive and optimistic. As you know, ICI bought a majority share of the Arnold, Hoffman company with a view to exploiting ICI developments and know-how in the USA, with particular reference to the organic chemical industry. The first steps taken were to strengthen the Company's position in the dyestuffs field, but regrettably the provision of additional capacity coincided with the loss of a substantial portion of US exports of dyestuffs and textiles, and these industries have never again reached the same level of activity.

As a result, Arnold, Hoffman & Co. ran into a very difficult period. However, I think I can now say that the position is much more rosy and that Arnold, Hoffman & Co. is ready to fulfil its original role. EDITOR: *Is there any special reason for this improvement?*

RICHARDSON: I believe that if I had to pick out one particular reason for the improvement in the Arnold, Hoffman company's prospects, I would say that the introduction of 'Procion' dyes, the outstanding discovery made by ICI Dyestuffs Division, has made the major contribution. The dyestuffs business in the USA in general suffers from over-capacity in traditional products, so that the availability to us of such a novel and outstanding range of dyestuffs has put us in a position to make progress even under very difficult conditions. Furthermore, the opportunity so presented has made it possible to strengthen our organisation both technically and commercially, so that we are now in a position to undertake expansion into fields of endeavour outside the strictly dyestuffs business.

EDITOR: *Could you give a quick sketch of where Arnold, Hoffman & Co. is—I mean where its main plants are—and what the order of turnover is?*

RICHARDSON: The head office of the company is located in Providence, Rhode Island, and the main manufacturing unit is at Dighton, Massachusetts, some eighteen miles away. In addition to the Dighton plant, there are minor manufacturing facilities at Cincinnati, Ohio, and Charlotte, North Carolina. The production of these plants has a selling value at the present time of the order of \$12 million per annum. Although a certain amount of selling is done through agents both in the USA and abroad, the main bulk of the company's production is sold

through the branch offices in Providence, Charlotte, and Atlanta, Georgia. The total number of personnel in the company is in the region of 400. If you examine a map of the United States you will see that the headquarters and main manufacturing facilities of the company are very deep in New England, whereas a large part of the company's market, as indicated by the location of the branch offices, is in the southern states. The reason for this apparent anomaly lies largely in the history of the textile industry. The Arnold, Hoffman company and its predecessor companies have been established for over 100 years, and at the time of its establishment was, in fact, at the heart of the textile industry in the USA. Since that time, however, the textile industry has gradually moved south, nearer the source of its raw material and cheaper labour. While in the case of high-cost material such as dyestuffs, distance and freight charges are of little importance, cheap textile auxiliaries, the original backbone of Arnold, Hoffman & Co., must of necessity be manufactured nearer consuming points. The facilities in Cincinnati and Charlotte are designed to cope with this situation.

EDITOR: *Can you add something about prospects?*

RICHARDSON: "I think the chief point to grasp is that Arnold, Hoffman & Co. is really the ICI manufacturing subsidiary in the United States. ICI, of course, also has ICI (New York), but this organisation has no manufacturing interests. It is Arnold, Hoffman that would exploit in the United States the winners out of the ICI stable. I have already mentioned 'Procion' dyes. Another product of which we have great hopes is 'Fluothane', ICI's outstanding anaesthetic. The plant is already on stream and is adequate to supply the

entire US market. We have great hopes for 'Fluothane.' Yet another product with considerable potentialities is Diquat—you call it 'Reglone.' I do not think I am revealing any secret when I say that manufacture of Diquat by Arnold, Hoffman & Co. is being considered and we would hope to start up our plant sometime next year.

EDITOR: *Does this mean that, suppose ICI had a break-through in the petrochemicals field, such as the discovery of another plastic winner of the order of polythene, Arnold, Hoffman & Co. would handle manufacture?*

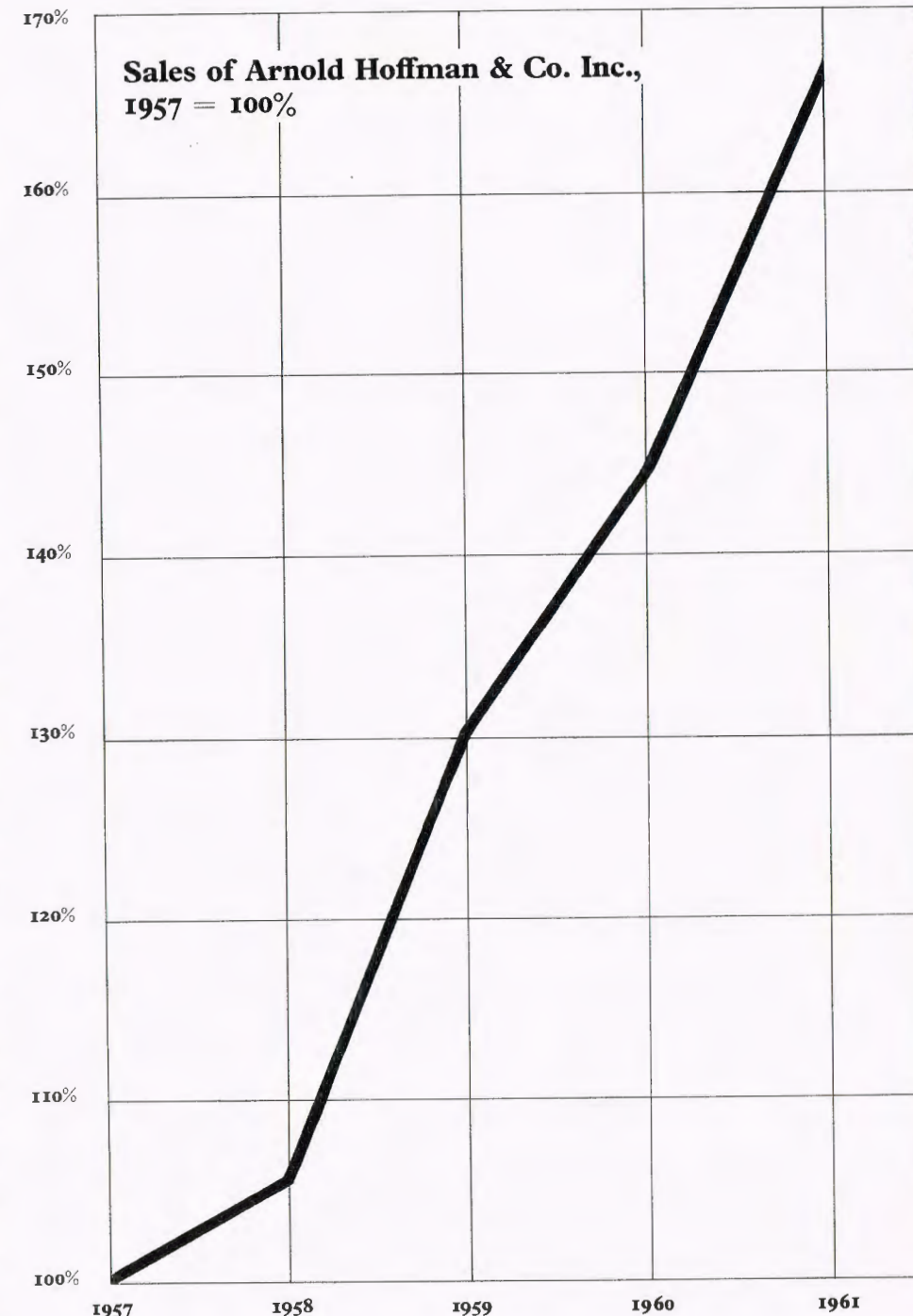
RICHARDSON: This is rather a hypothetical question, since so much depends on the nature of any new product together with the importance and availability of essential raw materials. However, I can say that any new product in the organic chemical field would and must be examined very thoroughly with a view to manufacture in the USA by Arnold, Hoffman & Co. so that the maximum exploitation of the discovery is made. One thing, I think, will be quite clear following my remarks on our present manufacturing sites, namely that it would be necessary to move nearer to one of the main centres of the American chemical industry and consuming industries so that maximum advantage can be taken of the availability of raw materials and the elimination of excessive freight rates, which can be significant when literally thousands of miles may be involved. The exploitation of any ICI break-through, therefore, would of necessity require the opening of a new manufacturing site, the location of which would naturally depend on the nature of the product and its potential market.

EDITOR: *If as you say Arnold, Hoffman is ICI's manufacturing subsidiary in the United States, I think it is important to know what percentage of the stock ICI holds.*

RICHARDSON: When ICI first purchased its interest in Arnold, Hoffman, 70% of the stock was acquired. Since that time by various means the ICI share has been increased and now stands at 91.7%.

EDITOR: *In view of the dominant ICI holding, is it your policy that the upper management should be staffed by ICI men sent out from Britain?*

RICHARDSON: In general terms, no. If it were a choice between two men equally competent—a locally trained American and an ICI man from Britain—we would



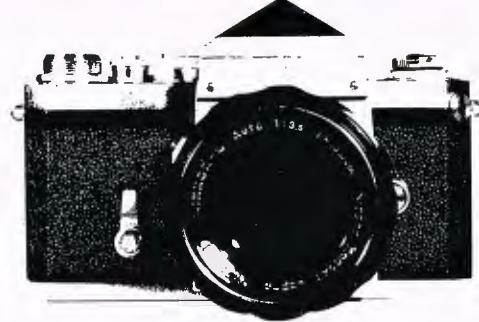
certainly choose the local man, but in practice this sort of problem does not really arise quite like that. It boils down simply to finding the best man for the job when a vacancy occurs. If a local man is up to it we will go to him, but if it is a question of qualifications which are not easy to match up to locally, someone may have to be sent over from ICI in Britain. However, we do not do this as a matter of deliberate policy. It simply happens from time to time because we cannot find locally just the right person with the right qualifications on all occasions.

EDITOR: *Financial commentators are*

very fond of the word "growth," and it often seems that the highest praise they can bestow on a company is to call it a growth company. Would you place Arnold, Hoffman & Co. in that category?

RICHARDSON: On performance to date I think it would be stretching a point to use this phrase, but if one looks at future prospects and if one has faith—as I have—in the quality and drive of ICI's research, I think that Arnold, Hoffman & Co., poised as it is to develop manufacture in the United States, could well be classed as a company with very distinct growth prospects.

NEWS IN PICTURES



Home and Overseas



Left

Heysham arouses world interest. The start-up of plants at Heysham operating ICI's new synthesis gas process, hailed as a major technological advance, has aroused considerable interest overseas, and to date thirty contractors and manufacturers have sought permission to operate the process under licence. Construction of this first commercial unit started in August 1960, and more than 300 men were employed at various times on construction. Our picture shows some of the men employed on the construction of the steam reforming plant

Above, right

Settles' showpiece. Horton Quarry, showpiece of Settles Limes Ltd., now a wholly owned subsidiary of ICI, looking down from the quarry face. Beyond stretches Ribblesdale, with Pen-y-Ghent dominating the horizon. Horton Quarry was founded by a Quaker, John Delaney, in the early 1870s. (See also *People and Events*, page 195)

Centre, right

Polythene pipeline. Drinking water is being taken across Galle harbour in Ceylon by a submerged 'Alkathene' plastic pipeline. The installation was carried out by Port Commission engineers in collaboration with ICI (Export), who make 'Alkathene' pipe in Ceylon. The cost of laying the pipeline was considerably reduced by using 'Alkathene' piping instead of traditional materials

Below, right

Gardeners' Sunday. The gardens of Warren House, ICI's Staff Training Centre at Kingston-upon-Thames, were thrown open to the public on 6th May to help to raise funds under the Gardeners' Sunday Scheme for the Gardeners' Royal Benevolent Society and the Royal Gardeners' Orphan Fund. Over 1900 visitors came and more than £100 was raised





Marston products for Swedish jet. The J35 Draken aircraft, a single-seat jet fighter with high supersonic speed made by the Saab Company of Sweden, the firm whose car won the Monte Carlo Rally earlier this year. Marston Excelsior recently received an initial order for 75 sets of flexible wing tanks for the Draken, the first order of any size to be supplied for a foreign-designed aircraft. They are also making a prototype heat exchanger



Diamond Wedding. Mr. George Davies, a General Chemicals Division pensioner, and his wife celebrated their diamond wedding on 28th April. Mr. Davies was employed at Muspratt Works, now a section of Gaskell-Marsh Works, as a labourer on the sulphide plant. He retired in 1937 after nearly 37 years' service



£400 award. Mr. St. J. Elstrib (*extreme left*) hands over a cheque for £400 to Mr. D. J. McNamara, an employee on the Witton titanium plant, for his suggestion on the butt welding of titanium alloy rods. The ceremony took place at the last meeting of the Metals Division Council. Mr. McNamara is putting the money towards an impending house move



Nobel's holiday special. 137 members of the Nobel Division recreation club at Ardeer flew off to New York on 4th May for a three-week holiday in Canada and the United States. The charter flight by Aer Lingus, which cost £65 a head, was the result of months of planning by a committee headed by Mr. Pat Kelly (Research and Development Dept.). Also concerned with the organisation was Mr. George Lyons (Ardeer garage foreman), who, as treasurer, handled several thousand pounds in fares



Pensioner from Down Under. The most travelled guest at Alkali Division's recent Foremen's Dinner was Mr. Arthur Wilkinson (*seated*). Formerly a Winnington process foreman, Mr. Wilkinson retired four years ago and went to live with his daughter in Australia. He timed his visit to this country so that he could attend the dinner. With him is Mr. Bill Malam, also a former Winnington foreman



New Banner. Bandsmen gather round to admire the new banner presented to the pipes and drums of the Ayrshire County Army Cadet Force, which are in fact the pipes and drums of the Ardeer squadron. The presentation of the pipe banner was the highlight of a weekend parade at which Ardeer cadets in competition with eight other teams won the Major D. C. Todd drill trophy for the second year in succession



We dance to win

by Lawrence Norton

COMPETITION ballroom dancing has today attained a peak of popularity that even ten years ago would have seemed unbelievable. Every day during the winter months hundreds of competitions are held all over the country, ranging from beginners' one-dance competitions in dancing schools to the great national and international championships, while during the summer immensely popular competition festivals take place at holiday camps and resorts. At championship level these competitions demand not only dancing skill but graceful elegance of a high degree; and for every couple who enter the leading championships there will be several hundred more attending

dancing schools, taking their bronze, silver and gold medal tests and entering first small local competitions, then larger events and finally championships. In fact, ballroom dancing is second only to football in popularity as a national pastime, and competition dancing is its shop window.

What does it involve for the serious competitor? He works as a team with his partner and teacher. Every week there will be at least two hours' private tutoring—sometimes more. And for every hour's lesson received the dancers will practise a further three hours together. This in itself raises several problems. For the waltz, foxtrot, quick-

step and tango (known collectively as the standard modern dances) practice is relatively easy, since these dances are played in so many ballrooms. But for the old-time dancer the picture is rather different. Dances used for competitions are rarely included in the programme of the majority of old-time dance halls. The teachers help to overcome this problem by organising practice nights for their pupils, but many couples have to hire a small hall or room for their practice. This of course offers the advantage of privacy, so important for serious practice, but it also adds to the already high cost of entering competitions.

On one occasion a friend of mine,

after dancing in a competition, noticed that all the adjudicators had marked him well except one. He ventured to ask this adjudicator why his opinion differed so much from that of his colleagues and he was told that his shoes were dirty. This may seem a comparatively unimportant detail, but it illustrates how stern is the competition and how the dancer cannot afford to overlook the smallest item. Of course the girl, whose appearance and grace are of paramount importance, carries here the larger responsibility. Expensive hair-dos for each competition (and there will be on an average one competition a week) are a must. And four new dresses a year, each one costing from £14 to £30, depending on whether or not she makes them herself, are equally essential. These dresses, incidentally, will contain anything up to 60 yards of net and several thousand sequins—every one sewn on by hand.

A Tough Life

Late nights until one in the morning are another part of the competitor's life. Competitions often involve travelling 60-100 miles, double that figure counting the return journey. On an average, a competition dancer travels 8000-10,000 miles a year. Fortunately many competitions are held on Fridays, affording non-Saturday workers the luxury of a few hours' extra sleep.

Competition dancing is not confined, as one might think, to the 16-year-olds and upwards. Children from 6 years old are to be seen on the ballroom floor, although there are stringent rules governing the entry of juveniles into competitions. These children are usually born and bred to competition dancing, coming from families already keenly interested in ballroom dancing. Among their ranks are probably the future champions.

One of the main differences between competition dancing today and that of a few years ago is the extremely high overall standard. In the past an excellent dancer stood out conspicuously from those of lesser talent. Today the gap between excellent and good is narrowing rapidly and the adjudicators' task is an increasingly difficult one.

Couples who are aiming for the highest honours cannot afford to spare any effort. The long haul to the top is a slow and laborious one, though there are exceptions. On rare occasions an exceptionally



The author dancing with his partner, Christine Wightman, with whom he won the United Kingdom Old Time Dance Championship



A professional team from Australia competes against England at Hammersmith Palais, London

talented couple will force their way quickly through the ranks. But in my opinion the main enjoyment in competition dancing comes from climbing the ladder steadily, rung by rung (stopping to catch your breath when you need it), gaining gradual success for each week's hard but enjoyable work.

Now, a word about organisation. Ballroom dancing falls into three main categories—Modern, Old Time and Latin American. I have already referred to the standard four modern dances and in big competitions and championships the Viennese waltz is sometimes added to these four. The dances known as "old time" are those in which a set sequence of steps is repeated round the room, such as the veleta, military two-step and latchford schottische, while the Latin American dances include the samba, rumba, paso

doble and cha-cha-cha. Any organiser who wishes to run a championship must apply to the Official Board of Ballroom Dancing for recognition of the title, and it must be run under the Board's rules. In fact all competitions of any standing adhere to these rules, which have been formulated for the protection of both dancers and organisers.

The Official Board was founded in 1929 by Mr. Philip J. S. Richardson, who is still, at the age of 87, its president. Pre-Official Board days were more or less disorganised chaos: amateurs danced in competitions against professionals and anybody could organise a championship in the hut at the bottom of his garden without the title being disputed. Today the Official Board consists of representatives of the professional teachers' organisations, representatives of the ball-

room proprietors, and representatives of the two associations catering for the dancers themselves, namely the Ballroom Dancers' Federation whose membership is drawn from the ranks of the professional competition dancers and the Amateur Ballroom Dancers' Council which represents the amateurs. A scheme for the registration of amateur competitors was instituted a few years ago. During the first year of its operation only a few hundred registered; now the number is over two thousand.

The English Style of ballroom dancing has spread throughout the world, and competitions attended sometimes by over 10,000 spectators are held frequently on the Continent and even further afield. British dancers, acknowledged as being pre-eminent, are much in demand at these events, and one of the rewards in

reaching the top is the opportunity of trips to the Continent with all expenses paid. Part of the registration fee is transferred to the Amateur Ballroom Dancers' Council to help meet expenses.

The leading titles in old-time competition dancing are the British, All England and Butlin's Open Amateur Championships and the Butlin's Veleta Competition. The British Championship is held at the Winter Gardens, Blackpool, in October and is the most coveted of the four. Heats for the Butlin's Veleta Competition take place every week at holiday camps throughout the summer and the finals are during the Butlin's Reunion Festival at the Albert Hall each March. This competition is sponsored by the *News of the World*, as is the Butlin's Open Amateur Championship held at Filey in Yorkshire.

Foreign Entrants

Unfortunately old-time is not danced on the Continent and these competitions never receive entrants from overseas. Our top modern and Latin American championships, however, are frequently entered by foreign couples—particularly the International Championships held at the Albert Hall in the autumn. The other leading titles are the Star and United Kingdom and the British Championships. The European Championships are usually held on the Continent, although the European Modern Amateur and Professional titles have nearly always been held by British dancers. Four years ago an official World Championship was recognised for the first time by the International Council of Ballroom Dancing and has been held in different parts of the world each year since then. It is held in eight dances—both modern and Latin American—and is the highest honour of all.

The most recent development of all is the great upsurge of interest resulting from television. Programmes featuring competition dancing command wide popularity, and now there is the prospect of even wider and more intense competition through the network of Eurovision. Perhaps one day there will even be regular television competitions between teams from Europe and those of America, Australia, South Africa and Japan, where the English Style of ballroom dancing has had a firm grip for many years. This is indeed something to look forward to.



The 1961 Junior Old Time Dance Festival at the Lyceum Ballroom, London



Old Time Formation Championships at Butlin's Albert Hall Reunion

ALPINE HOLIDAY



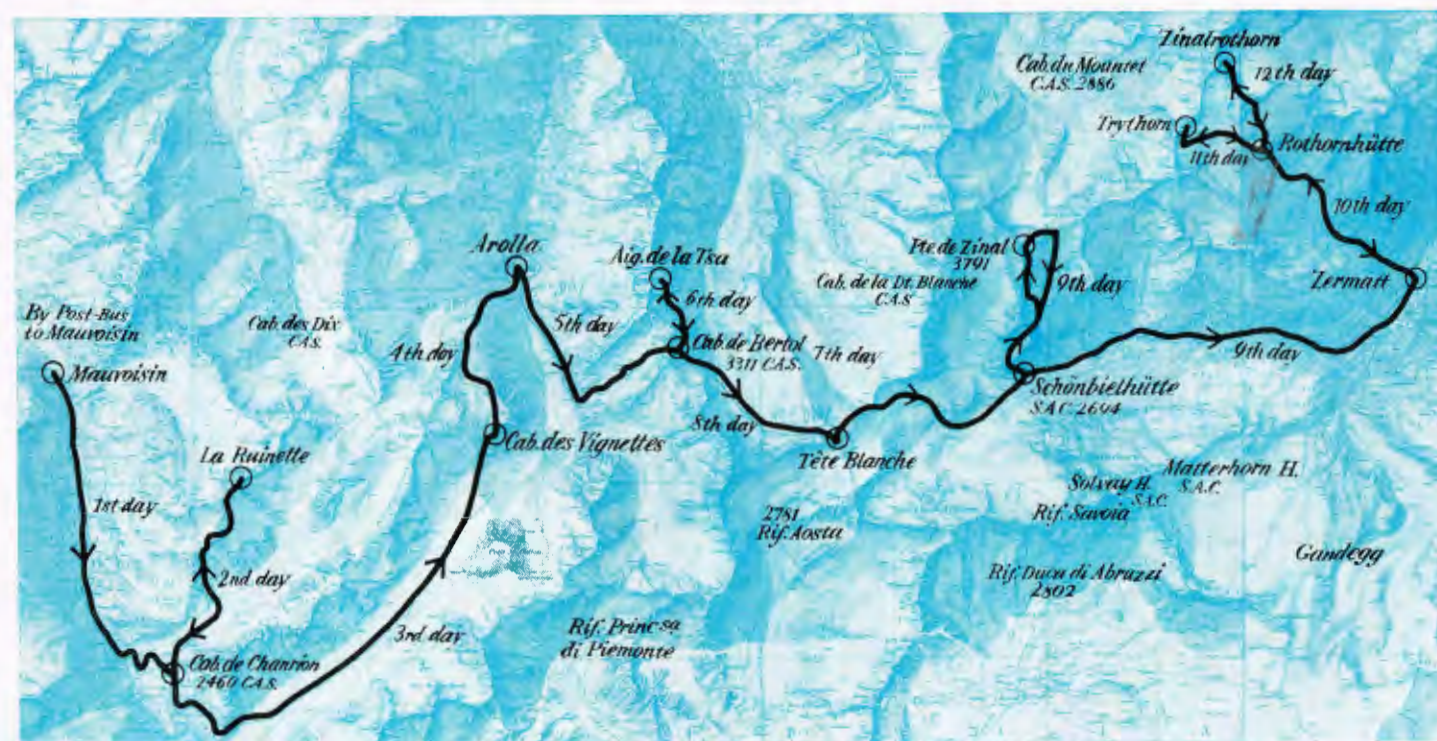
Six climbers, including one girl, chose to spend their precious two weeks and very little cash on one of the most adventurous of European journeys—the high-level route over the glaciers and mountains of the Valais range along the southern frontier of Switzerland. It was the younger members' first Alpine holiday. They carried all their gear and food, living in the high huts and climbing some of the more challenging peaks. Penury dictated only one descent to the valleys for a brief luxurious breather. Here is a record in pictures of their journey.

photographed by Gordon Waldie

12th day. **Ascent of Zinalrothorn.** The climbers are on the south-east ridge at the traditional "breakfast place." Our tracks on the ridge crest in the distance lead up from the Rothornhütte. Zermatt lies in the valley beyond



LEFT: 9th day. Ascent of Pte. de Zinal (12,430 ft.). We started from the Schönbielhütte before dawn. Now climbing in the early sun, Doug leads up a rock pitch on the south ridge of this peak. ABOVE: 9th day. On the Pte. de Zinal. The descent from the summit is now over the snows of the east ridge down to the Col Durand, one of the few passes between Zermatt and Zinal. OPPOSITE: 9th day. Approaching Zermatt. From the Pte. de Zinal we returned to the Schönbielhütte and followed the track by the edge of the Z'muttgletscher. A dusty and lean Doug pauses on the path as we near the end of our journey





1st day. **Start of the journey.** The post bus has brought us up the Val de Bagnes to the road terminus at Mauvoisin



1st day. **Val de Bagnes.** On the path leading to the Swiss Alpine Club hut, the Cabane de Chanrion (8060 ft.)



3rd day. **Glacier d'Otemma.** The broad highway from the Cabane de Chanrion to the Cabane des Vignettes. The Petite Mt. Collon lies 4 miles away



3rd day. **Col de Chermotane.** We are now close to the Cabane des Vignettes. Beyond the Val d'Arolla, our route lies among the distant peaks



8th day. **Approaching the Tête Blanche.** This was the easiest ascent of the holiday. Alan, Carolyn and Doug form the distant rope



8th day. **On the Tête Blanche (12,210 ft.),** looking down the Stockjigletscher towards Zermatt, still sleeping under its valley cloud



11th day. **On the Trifhorn (12,230 ft.),** climbed from the Rothornhütte (10,490 ft.). At the end of the mile-long ridge is the Zinalrothorn



12th day. **Ascent of the Zinalrothorn (13,840 ft.).** Our route from the south-east ridge has crossed the south face to the Rothorn ridge



2nd day. **Ascent of La Ruinette (12,700 ft.).** Now half-way to the summit, our unacclimatised party is already winded by the thin air



6th day. **Dawn over the Dent Blanche,** one of the highest peaks in the Valais range. Our base is the Cabane de Bertol (10,860 ft.)



8th day. **Col d'Hérens.** We cross our last pass. Doug jumps the bergschrund below the col



12th day. **Summit party on the Zinalrothorn.** John, Alan, Brian, Carolyn and Doug relax for an hour before descending



2nd day. **After the storm.** Our clothes, soaked through during the descent of La Ruinette, have been strung on a climbing rope



8th day. **On the Glacier du Mont Miné.** Our journey continues eastwards and the morning greets John and Brian



8th day. **Approaching the Schönbielhütte (8830 ft.).** Climbing up from the moraine-covered Z'muttgletscher at the end of a long day



13th day. **End of our holiday.** Breakfast in the sun on Zermatt railway station on our return from the Rothornhütte



"Spider Web." Photo by H. Smith